

**REMARKS****I. Summary**

Claims 1, 3, 8, 14-16, 18-22, 26, 50, 52-58, 62 and 76 are pending in the subject Application. None of the pending claims has been amended in response to the outstanding Non-Final Rejection, in which the following issues were raised by the Examiner:

- Claims 1, 3 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over United States Patent No. 5,420,883 to Swenson *et al.* ("Swenson"), in view of United States Patent No. 7,073,753 to Root *et al.* ("Root"); and
- Claims 14-16, 18-22, 26, 50, 52-58, 62 and 76 are rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 5,828,979 to Polivka *et al.* ("Polivka").

In view of the following Remarks, Applicants respectfully submit that Claims 1, 3, 8, 14-16, 18-22, 26, 50, 52-58, 62 and 76 are in condition for allowance, and prompt entry to this effect is respectfully requested.

**II. Claim Rejections Under 35 U.S.C. § 103(a)**

The Examiner rejected Claims 1, 3 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Swenson and Root. Applicants respectfully disagree.

Applicants submit that the Examiner has erroneously deemed Claims 1, 3 and 8 obvious in view of Swenson and Root. Claims 1, 3 and 8 recite, *inter alia*, a first processor configured to control an operation of railroad infrastructure, including

servicing operations, wherein the first processor controls servicing operations in accordance with generated output instructions by issuing work orders to service facilities for refueling trains, scheduling work bays, work crews and tools, or ordering parts. However, such features are neither described nor suggested by either Swenson or Root.

Swenson describes communications devices and networks for tracking and controlling train movements, and for maintaining safety buffers between trains. Indeed, Swenson expressly states that its devices and networks have the “two primary purposes” of determining real-time positions of trains with high resolution and transferring command information from control stations to trains at high data transfer rates, as well as “two major functions” of headway minimization and regenerative breaking. *See* Swenson, col. 3, line 22-26; col. 2, line 65 – col. 3, line 4. The systems described in Swenson are expressly intended to overcome the limitations and inefficiencies of prior art inductive loop, tag systems, dead reckoning and Global Positioning System (GPS) tracking systems, as well as human-based and automated controls techniques. *See* Swenson, col. 1, line 47-col. 2, line 62. In Swenson, the devices and networks divide transportation corridors into control zones, and manage train operations from control stations, which issue movement commands to ensure that trains come to complete stops before entering respective zones along their paths. *See* Swenson, col. 4, lines 51-61; col. 5, lines 3-13. On-board train controllers implement commands issued by the control station and then deliver specific control signals to the train’s motors, brakes and doors. *See* Swenson, col. 7, lines 16-26.

However, Swenson fails to describe or even suggest controlling servicing operations or issuing work orders, as is recited in Claim 1, 3 and 8. Swenson is solely

focused on maintaining spatial separation between trains and improving data transfer rates between trains and stations, and does not mention (or even hint at) scheduling work bays, scheduling work crews, scheduling tools or ordering parts, as is recited in Claims 1, 3 and 8. In fact, none of the control messages contemplated by Swenson has anything to do with managing, ordering or scheduling servicing operations, as is recited in Claims 1, 3 and 8. *See* Swenson, col. 12.

Notably, Root cannot overcome Swenson's deficiencies in this regard. Root describes an integrated train control system that integrates then-existing control systems that were developed by New York Air Brake Corporation, the assignee of that patent, *see* Root, col. 1, lines 20-22, or "equivalent systems" to those then-existing systems. *See* Root, col. 11, lines 6-10. The integrated train control system of Root consists of specific, proprietary "building blocks," including locomotive equipment, braking equipment, an end-of-train device and power and communications distribution systems, *see* Root, col. 3, lines 47-50, with the locomotive equipment further comprising a power supply, communications controller, brake controller, operator interface unit and identification module. Root, col. 3, lines 51-55. While Root does briefly reference a "Smart Car" system, which detects train car defects such as hot bearings, flat wheels or wheels-off-rail, Root does not teach, describe or suggest a system for controlling servicing operations, issuing work orders, directing refueling operations, scheduling work bays, scheduling work crews, scheduling tools, or ordering parts, as are recited in Claims 1, 3 and 8. Indeed, Root is solely focused on integrating existing train control systems, and is wholly silent as to servicing trains.

“To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.” M.P.E.P. § 706.02(j), *citing Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985). Clearly, for the reasons set forth above, Swenson and Root fail to suggest, either expressly or impliedly, the novel controlling of servicing operations and issuing work orders by a first processor, as is recited in Claim 1, 3 and 8.

Because the references themselves lack an express or implied suggestion of the inventions recited in Claims 1, 3 and 8, in order to reject these claims under 35 U.S.C. § 103(a), the Examiner was required to “present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.” Applicants respectfully submit that the Examiner has failed to meet his burden in this regard. Although the Examiner asserts, *ipse dixit*, that Swenson discloses a first processor configured to control an operation of a railroad infrastructure, including servicing operations, *see* Office Action, at 2-3, the portions of Swenson cited by the Examiner – and the disclosure of Swenson as a whole – utterly lack any reference to servicing operations; directing refueling operations; scheduling work bays, work crews or tools; and ordering parts.

Moreover, the Examiner’s obligation to set forth a “convincing line of reasoning” as to why a claimed invention would be obvious is mandatory, not optional. Indeed, the Manual for Patent Examining Procedure clearly states that “[t]he key to supporting any rejection under 35 U.S.C. § 103 is the clear articulation of the reason(s) why the claimed

invention would have been obvious,” and that the “analysis supporting a rejection under 35 U.S.C. § 103 should be made explicit.” M.P.E.P. § 2141 (emphasis added). Thus, the absence of such an explicit articulation is fatal to the Examiner’s rejections of Claims 1, 3 and 8. Indeed, in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 U.S.P.Q.2d 1385 (2007), the United States Supreme Court noted that “rejections on obviousness cannot be sustained by mere conclusory statements,” such as those made by the Examiner with respect to the teachings of Swenson and Root, and “instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id.* at 418, 82 USPQ2d at 1396, *quoting In re Kahn*, 441 F.3d 977, 988, 78 U.S.P.Q.2d 1329, 1336 (Fed. Cir. 2006) (emphasis added). Because the Non-Final Rejection lacks any such articulated reasoning, this type of rejection under 35 U.S.C. § 103(a) cannot stand.

For the foregoing reasons, Applicants respectfully submit that Claims 1, 3 and 8 are not obvious in view of the proposed combination of Swenson and Root, and respectfully request that the rejections thereof be withdrawn.

### III. Claim Rejections Under 35 U.S.C. § 102(b)

The Examiner rejected Claims 14-16, 18-22, 26, 50, 52-58, 62 and 76 under 35 U.S.C. § 102(b) as being anticipated by Polivka. Again, Applicants respectfully disagree.

Applicants submit that Claims 14-16, 18-22, 26, 50, 52-58, 62 and 76 are patentably distinct over Polivka. Claim 14 recites a multi-level system for managing a railway system and its operational components, including, *inter alia*, a first level configured to control a servicing operation by issuing work orders comprising refueling

instructions, scheduling a work bay, scheduling a work crew, scheduling a tool, or ordering a part, to a service facility. Claim 50 similarly recites a system for management of a multi-level railway system and its operational components, comprising a first level including first level operational parameters defining changes in operational characteristics of service facilities of the railway system and data of the first level, said characteristics comprising availability of cost of fuel, work crews, maintenance bays, tools, replacement locomotives or parts. Because Polivka fails to describe the systems recited in Claims 14 and 50, Polivka does not anticipate these claims.

Polivka describes methods and systems for controlling the movement of trains through a network of track in a multiple route railway system. *See* Polivka, col. 1, lines 8-19. These methods and systems are intended to better hold trains to schedules and to respond to disruptions in service by exerting precise control over their movements. *See* Polivka, col. 1, lines 32-37. The methods and systems include a scheduler, a dispatcher, a safety insurer and a train controller, and instructions and controls are sent from the central system in the form of “movement plans,” which are developed by the dispatcher for the entire system, based on a coarse resource schedule prepared by the scheduler. *See* Polivka, col. 4, lines 38-67. Instructions to individual trains, known as “trip plans,” are based on the movement plan, and may contain station data, wind and track conditions, position, time, velocity, motor current, throttle position and brake pipe pressures. *See* Polivka, col. 7, lines 30-49.

The movement plan of Polivka is defined as a “timeline projection of the position of the trains throughout the plan and takes into account the physical forces which are expected to occur during the actual carrying out of the plan,” such forces including

inertia, mass, position, direction, weight, aerodynamics, length, available power, traction, grade and curvature. *See* Polivka, col. 5, lines 8-29, lines 46-67. When unforeseen conditions occur within the railway system, the only recourse taught, described or suggested within Polivka is to modify the movement plan accordingly. *See* Polivka, col. 7, lines 3-23. However, neither the movement plan, the trip plan, nor any other element of the systems and methods described in Polivka controls a servicing operation or issues work orders for service facilities for refueling, scheduling service, or ordering parts, as is recited in Claim 14. Nor does any aspect of Polivka describe operational parameters such as the availability or cost of fuel, work crews, maintenance bays, tools, replacement locomotives or parts, as is recited in Claim 50. The portions of Polivka cited by the Examiner as describing these elements, including columns 4, 5 and 6, relate to the controlled movement of trains in various conditions, but lack any teaching, suggestion or description of servicing operations or operational parameters such as scheduling services, ordering parts or directing refueling.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Because Polivka fails to disclose a multi-level system for managing a railway system and its operational components, including a first level configured to control a servicing operation by issuing work orders to a service facility, as is recited in Claim 14, or a system for management of a multi-level railway system and its operational components, comprising a first level including first level operational parameters defining changes in operational characteristics of service facilities of the railway system and data

of the first level, said characteristics comprising availability of cost of fuel, work crews, maintenance bays, tools, replacement locomotives or parts, as is recited in Claim 50, as amended, Polivka cannot anticipate these claims.

Accordingly, Claims 14 and 50 are believed to be allowable over Polivka and the prior art of record, and prompt entry to this effect is respectfully requested. Moreover, because Claims 15, 16, 18 through 22 and 26 depend from Claim 14, and because Claims 52 through 58, 62 and 76 depend from Claim 50, it is respectfully submitted that these claims are allowable, as well.

#### **IV. Applicants' Comments Regarding Response to Arguments**

In the "Response to Arguments" section of the Office Action, the Examiner admonished Applicants to consider the prior art as a whole. Applicants have thoroughly reviewed the cited prior art, and aver that even when the prior art is considered as a whole or in combination, it fails to show or suggest the subject matter recited in the pending claims, for the reasons set forth above. With regard to specific sections of Polivka identified by the Examiner, and further to the above:

- FIGS. 2 and 4-14 show flowcharts and diagrams of systems for controlling the movement of trains through a network of track in a multiple route railway system. However, FIGS. 2 and 4-14 fail to teach, describe or suggest, either expressly or impliedly, controlling servicing operations or issuing work orders for service facilities for refueling, scheduling service, or ordering parts, or operational parameters such as the availability or cost



of fuel, work crews, maintenance bays, tools, replacement locomotives or parts.

- Col. 4, lines 39-67, generally describes a train control system including a planner/scheduler that develops a coarse schedule and a planner/dispatcher that creates a movement plan and dispatches it to trains, but fails to teach, describe or suggest: controlling servicing operations or issuing work orders for service facilities for refueling, scheduling service, or ordering parts; operational parameters such as the availability or cost of fuel, work crews, maintenance bays, tools, replacement locomotives or parts; a first level configured to control servicing operations, including issuing work orders for implementing servicing operations; a second level that is a sub-level of the first level; or controlling the operation within these levels based on first level and second level operational parameters.
- Col. 5, lines 1-64, describes the development of movement plans, or “timeline projections of the position[s] of trains,” *see* col. 5, lines 8-9, based on physical forces and block boundaries, but fails to teach, describe or suggest: controlling servicing operations or issuing work orders for service facilities for refueling, scheduling service, or ordering parts; operational parameters such as the availability or cost of fuel, work crews, maintenance bays, tools, replacement locomotives or parts; a first level configured to control servicing operations, including issuing work orders for implementing servicing operations; a second level that is a sub-level of

the first level; or controlling the operation within these levels based on first level and second level operational parameters.

- Col. 6, lines 36-64, describes the transmission of trip plans, “which consist[] of as much of the movement plan as is applicable to” a respective train, and determining the position of a respective train, but fails to teach, describe or suggest: controlling servicing operations or issuing work orders for service facilities for refueling, scheduling service, or ordering parts; operational parameters such as the availability or cost of fuel, work crews, maintenance bays, tools, replacement locomotives or parts; a first level configured to control servicing operations, including issuing work orders for implementing servicing operations; a second level that is a sub-level of the first level; or controlling the operation within these levels based on first level and second level operational parameters.
- Col. 7, lines 3-67, describes transmitting movement information from a train to the dispatch, or the detailed composition of a trip plan, but fails to teach, describe or suggest: controlling servicing operations or issuing work orders for service facilities for refueling, scheduling service, or ordering parts; operational parameters such as the availability or cost of fuel, work crews, maintenance bays, tools, replacement locomotives or parts; a first level configured to control servicing operations, including issuing work orders for implementing servicing operations; a second level that is a sub-level of the first level; or controlling the operation within these levels based on first level and second level operational parameters.

- Col. 8, lines 1-67, generally describes operating signals, throttles, brakes and power consumption, but fails to teach, describe or suggest: controlling servicing operations or issuing work orders for service facilities for refueling, scheduling service, or ordering parts; operational parameters such as the availability or cost of fuel, work crews, maintenance bays, tools, replacement locomotives or parts; a first level configured to control servicing operations, including issuing work orders for implementing servicing operations; a second level that is a sub-level of the first level; or controlling the operation within these levels based on first level and second level operational parameters.

#### **V. Conclusion**

The pending claims are believed to be allowable over the prior art of record. Accordingly, it is respectfully requested that this Application be allowed, and a Notice of Allowance issued. If the Examiner believes that a teleconference with Applicants' attorney would be advantageous to the disposition of this case, or if it would otherwise facilitate the examination of this Application, the Examiner is cordially invited to contact the undersigned at the telephone number below.

Respectfully submitted

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/ John A. Kramer /  
John A. Kramer  
Reg. No. 46,302  
Attorney for Applicants

GE Global Patent Operation  
P.O. Box 861  
2 Corporate Drive, Suite 648  
Shelton, CT 06484

Tel.: (203) 944-6710  
Fax: (203) 944-6712  
E-mail: john.kramer1@ge.com